DDT v2 Texture File Format

DDT Data Structures

Header Structure

Magic Number	4 bytes
Texture Properties	1 byte
Number of Alpha Bits	1 byte
Storage Format	1 byte
Number of Mip Levels	1 byte
Texture Width	4 bytes (signed)
Texture Height	4 bytes (signed)
Total Size:	**16 bytes**

- **Magic Number:**
  - Has to contain the ASCII string “RTS3” (not null-terminated). The original implementation does not seem to care about this value at all. Should be used for verification.
- **Texture Properties:**
  - TEXTURE_NORMAL_MAP (0x00)
  - TEXTURE_NO_ALPHA_TEST (0x01) **[Legacy]**
  - TEXTURE_NO_LOW_DETAIL (0x02) **[Legacy]**
  - TEXTURE_DISPLACEMENT_MAP (0x04)
  - TEXTURE_CUBEMAP (0x08)
- **Number of Alpha Bits (Legacy):**
  - Can only hold the values 0, 1, 4 or 8. Only used with legacy texture formats. Undefined value for non-legacy texture formats.
- **Storage/Texture Format:**
  - Raw32 (0x01) **[Legacy]**: Uncompressed RGBA8
  - Raw24 (0x02) **[Legacy]**: Uncompressed RGB8
  - BT8 (0x03) **[Legacy]**: BT8
    - Read BT8 Image Info structure for texture decoding
  - DXT1 (0x04) **[Legacy]**: Block Compression 1 (see BC1)
    - Sometimes supported by GPU. Decompress CPU-side to be safe.
  - DXT1PlusAlpha (0x05) **[Legacy]**: Block Compression 1 + alpha
    - Not natively supported by GPU! Decompress before uploading!
  - DXT3 Swizzled (0x06) **[Legacy]:** Swizzlde Block Compression 2

        - Not natively supported by GPU! Decompress before uploading!
    - AlphaData (0x07) **[Legacy]**: 8-bit single channel alpha data
    - BC1 (0x04): Block Compression 1 (Native GPU support)
    - BC2 (0x08): Block Compression 2 (Native GPU support)
    - BC3 (0x09): Block Compression 3 (Native GPU support)
    - RGBADeflated (0x0A): zlib deflated RGBA8
    - AlphaDeflated (0x0B): zlib deflated R32F
    - RG16Deflated (0x0C): zlib deflated RG16

DDT Image Entry

Offset to Image Data	4 bytes (unsigned)
Image Data Size	4 bytes (unsigned)
Total Size:	**8 bytes**

- **Offset to Image Data:**
    - Offset determined from the beginning of the file.
- **Image Data Size:**
    - Size of the image as stored in the file. Not the final decompressed size.

BT8 Image Info (Legacy)

Number of Palette Colors	4 bytes (unsigned)
RGB8 Palette Offset	4 bytes (unsigned)
R5G6B5 Palette Offset	4 bytes (unsigned)
R5G5B5 Palette Offset	4 bytes (unsigned)
A1R5G5B5 Palette Offset	4 bytes (unsigned)
A4R4G4B4 Palette Offset	4 bytes (unsigned)
Total Size:	**24 bytes**

- **Number of Palette Colors:**
    - Amount of color entries in palette buffer. Palette buffer has to be large enough to store this amount of 16 bit (word) values.
- **Palette Offsets:**
    - Offsets are determined from the beginning of the file.
    - Not all palettes have to be available for a single texture file. If offset holds a value of 0, the palette is not available for that specific texture.

DDT Image Info

Data Offset	4 bytes (unsigned)
Data Size	4 bytes (unsigned)
Image Width	4 bytes (signed)

Image Height	4 bytes (signed)
Total Size:	**16 bytes**

- **Data Offset:**
  - Image data offset from the beginning of the file.

- **Data Size:**
  - Image data size in texture file. This is not the final decompressed size.

DDT File Layout

- **DDT Header**
- If Storage Format is BT8:
  - **BT8 Image Info**
- For all faces in texture (1 for regular texture, 6 for cubemap):
  - For number of mip levels:
    - **DDT Image Entry**
- Image info, data and BT8 Palette buffer at unspecified locations in file. Read offsets in corresponding header structures to get correct data locations.